CLAIMS

1. A network station manager for a network station, comprising:

a management task component adapted to communicate with a plurality of task components to establish and manage the connectivity of the network station to a network.

2. The network station manager of claim 1 wherein the management task component is state-driven.

3. The network station manager of claim 2 wherein the management task component comprises a centralized error handling state.

4. The network station manager of claim 3 wherein the management task component further comprises a start time-of-day state and a start trivial-file-transfer protocol state.

5. The management task component of claim 3, further comprising an operational state configured to respond to messages from the task components.

6. A network station manager for a cable modem network station, comprising:

a management task component configured to initialize the network station and to maintain connectivity of the network station with a cable network, the management task component comprising a state machine configured to communicate with a plurality of task components.

7. The network station manager of claim 6 wherein the state machine comprises a centralized error handling state and peripheral states comprising an initialization state, a start dynamic-host-configuration protocol state, a configuration-download state, a start

simple-network-management protocol state, and an operational state, the operational state configured to monitor for error messages and other messages communicated from other states and to communicate the error messages to the centralized error handling state and to send request messages to an Operational Support System Interface (OSSI) management task.

8. The network station manager of claim 7 wherein the OSSI management task comprises a start software upgrade task configured to respond to a software upgrade message and initiate upgrading of software.

9. The network station manager of claim 7 wherein the error handling state is configured to receive a reported error detected in one or more of the states, to request error event logging from the OSSI management task, and to initiate error recovery, and, when error recovery is not possible, to enter a dead state.

10. The network station manager of claim 7, further comprising an initialization state configured to initialize an Internet Protocol (IP) stack.

11. The network station manager of claim 10 wherein the initialization state further configured to initialize a bridge component to enable communication between the IP stack and a media access control component.

12. The network station manager of claim 7, further comprising a start dynamic-host-configuration protocol state configured to initiate creation and commencement of a dynamic-host-configuration protocol task.

13. The network station manager of claim 7, further comprising a configuration-download state configured to start a configuration-download task.

14. The network station manager of claim 7 wherein the start simple-network-management protocol state is configured to start a simple-network-management protocol task.

15. The network station manager of claim 7, further comprising a change upstream-or-downstream-channel state configured to change an initial upstream channel identification to match a predetermined channel identification.

16. The network station manager of claim 7, further comprising a start time-of-day state configured to initiate the creation and commencement of a time-of-day task component.

17. The network station manager of claim 16 wherein the time-of-day task component is configured to run in parallel with the management task component and periodically update the network time local to the management task component.

18. A network station management system for a network station, comprising:

a plurality of task components for initializing and establishing network connectivity of the network station; and

a management task component configured to communicate with each of the task components for controlling the initialization of the network station and the connectivity of the network station to the network.

19. The system of claim 18 wherein the management task component comprises a plurality of states.

20. The system of claim 19 wherein the plurality of states comprises an error handling state configured to respond to errors in one or more of the plurality of states.

21. The system of claim 20 wherein the error handling state is configured to receive and log error messages, to request error event logging from an Operational Support System Interface (OSSI) management task, and to initiate error recovery.

22. The system of claim 19, further comprising an operational state configured to monitor for error messages and other messages from other states and to communicate the error messages to the error handling system and to send request messages to an Operational Support System Interface (OSSI) management task.

23. The system of claim 19, comprising an initialization state for initializing an Internet Protocol (IP) stack and setting up a data forwarding component to enable communication between a network layer, such as an IP layer and a media access control component.

24. The system of claim 19 wherein the plurality of task components comprises a dynamic-host-configuration protocol task, and the plurality of states comprises a start dynamic-host-configuration protocol state configured to initiate creation and commencement of the dynamic-host-configuration protocol task.

25. The system of claim 24 wherein the dynamic-host-configuration protocol task is configured to obtain at least one or more of: an IP address from a dynamic-host-configuration protocol server, an IP address of a time-of-day server, an IP address of a trivial-file-transfer protocol server, and an IP address of a SYSLOG server.

26. The system of claim 19 wherein the plurality of task components comprises a simple-network-management protocol task, and wherein the plurality of states comprises a start simple-network-management protocol state configured to initiate creation and commencement of the simple-network-management protocol task.

27. The system of claim 26 wherein the simple-network-management protocol task is configured in accordance with DOCSIS specification to act as a simple network management agent.

28. The system of claim 19 wherein the plurality of states comprises a change upstream-or-downstream-channel state configured to change an upstream channel identification to match a predetermined channel identification.

29. The system of claim 28 wherein the change upstream-or-downstream-channel state is configured to select an initial ranging state as the next state upon successful execution of the change upstream-or-downstream-channel state.

30. The system of claim 19 wherein the plurality of task components comprises a time-of-day task component, and wherein the plurality of states comprises a start time-of-day state configured to initiate creation and commencement of the time-of-day task.

31. The system of claim 30 wherein the time-of-day task is configured to retrieve a time of day from a time-of-day server for internal event logging, the time-of-day task further configured to run in parallel with the management task component and the plurality of task components.

32. The system of claim 19 wherein the plurality of task components comprises a configuration-download task, and the plurality of states comprises a configuration-download state configured to initiate creation and commencement of configuration-download task.

33. The system of claim 32 wherein the configuration-download task is configured to initialize the network station with data from a network station configuration file.

34. The system of claim 19 wherein the plurality of task components comprises an operation support-system-interface management task component that comprises a software upgrade task, and wherein the plurality of states comprises a start software upgrade state to initiate upgrading of software.

35. A network station management method, comprising:

initializing and configuring a cable network station using a state-driven machine according to a predetermined set of parameters to establish connectivity to a cable network; and

managing the network station connectivity to the cable network.

36. The method of claim 35 wherein initializing the network station comprises initializing an Internet Protocol (IP) stack and setting up a bridge component to enable communication between the IP stack and a media access control task for establishing IP connectivity.

37. The method of claim 35 wherein initializing the network station comprises creating and starting a dynamic-host-configuration protocol task.

38. The method of claim 37 wherein the dynamic-host-configuration protocol task obtains one or more of:

an IP address from a dynamic-host-configuration protocol server, an IP address from a time-of-day server, an IP address of a trivial-file-transfer protocol server, and an IP address of a SYSLOG server.

39. The method of claim 35 wherein initializing the network station comprises creating and starting a time-of-day task that retrieves the time of day from a time-of-day server for internal event logging and configuring the time-of-day task to continually run in parallel with other network station tasks.

40. The method of claim 39, further comprising periodically updating time local to the network station through the time-of-day task.

41. The method of claim 35 wherein initializing comprises creating and commencing a configuration-download task.

42. The system of claim 41, further comprising downloading through the configuration-download task a network station configuration file.

43. The system of claim 41, further comprising initiating from the configuration-download task the changing of an upstream or downstream channel identification to match a predetermined channel identification.

44. The method of claim 35 wherein initializing comprises creating and starting a simple-network-management protocol task.

45. The method of claim 44, further comprising establishing connectivity of the network station with simple-network-management managers through the simple-network-management protocol task.

46. The method of claim 35, wherein managing the connectivity of the network station to the network comprises monitoring initialization tasks for error messages and sending error messages to an error handler.

47. The method of claim 46, further comprising receiving error messages in a error handler and initiating error recovery.

48. The method of claim 47, further comprising logging error messages received in the error handler.

49. The method of claim 35 wherein managing the network connectivity of the network station comprises monitoring for a software upgrade message and sending software upgrade messages to a software upgrade task.

50. The method of claim 49, further comprising upgrading software through a software upgrade task in response to a software upgrade message and reinitializing the network station.

51. A method of administering a broadband, cable modem network station for connectivity to a network, the method comprising:

initializing the network station to a predetermined set of parameters;

creating and starting a dynamic-host-configuration protocol task;

creating and starting a time-of-day task;

creating and starting a configuration download task;

creating and starting a simple-network-management protocol task;

entering an operational state upon successful initialization of the network station and connectivity with the network, and, while in the operational state, monitoring the tasks for messages, including error messages and task messages;

receiving error messages and initiating error recovery in response to the error messages; and

receiving request messages and sending request messages to a request message management task.

52. The method of claim 51 wherein starting the dynamic-host-configuration protocol task comprises receiving one or more of the following:

an IP address from a dynamic-host-configuration protocol server, an IP address of a time-of-day server, an IP address of a trivial-file-transfer protocol server, an IP address of a SYSLOG server.

53. The method of claim 51 wherein the creating and starting the time-of-day task comprises:

obtaining time-of-day from a time-of-day server; and

continuously updating the time-of-day task to update local time in the network station.

54. The method of claim 51 wherein the creating and starting the configuration-download task comprises downloading a network station configuration file through a trivial-file-transfer protocol task; and

sending a completion message when the configuration-download task is finished and otherwise sending an error message.

55. The method of claim 54, further comprising receiving a change upstream-or-downstream-channel message;

changing the upstream or downstream channel identification to match a channel identification in the change upstream-or-downstream-channel message; and

sending request messages to a message management task.

56. The method of claim 51 wherein the creating and starting the simple-network-management protocol task comprises establishing connectivity with simple-network-management managers.

57. The method of claim 51, further comprising:

receiving a software upgrade message;

starting a software upgrade task to upgrade software in accordance with the message; and

reinitializing the network station upon completion of the software upgrade.

58. The method of claim 57 wherein starting the software upgrade task comprises communicating with an operation support-system-interface management task to start the software upgrade task.

59. The method of claim 51 wherein initiating the network station further comprises creating an operation support-system-interface management task.